METEOROLOGICAL OFFICE

Surface Observations

NEWSLETTER FOR CLIMATOLOGICAL OBSERVERS IN ENGLAND AND WALES

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FOR

CLIMATOLOGICAL OBSERVERS

IN

ENGLAND AND WALES

NO. 9

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Produced by:

Met O 1
Observational Requirements and Practices Branch
Eastern Road
Bracknell
Berkshire
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Editorial

This year there are three long service awards of barographs to be presented to observers who have completed 30 years of observing and have submitted returns of good quality during that time. Two of these observers are in Scotland and one, Mr T L Hodgson, reports from Rodney Stoke, near Wells, Somerset. We are also happy to publish another list of awards to observers who qualify for a Book Award. As last year, this takes the form of "The University Atlas" which we hope will be of the greatest interest to all recipients. Again, those observers on the list have qualified by completing at least 15 years continuous recording of daily observations and submitting monthly returns of good quality throughout the period. Congratulations to all those concerned.

Towards the end of this year, letters giving details of next year's training courses to be held at Meteorological Office College, Shinfield Park, Reading will be sent to all stations. Application forms will accompany the letters but observers may like advance information of the dates:

21	March	to 25	March	1983
18	April	to 22	April	1983
16	May	to 20	May	1983
13	June	to 17	June	1983
5	September	to 9	September	1983

With the introduction on 1 January 1982 of a new code for State of Ground when there is snow cover, observers might appreciate some detailed guidance on what to report when winter comes. Our colleagues at Edinburgh have devised a "flow-chart" and we reproduce this for observers south of the Border.

With Mr R J Ogden's permission, we are reproducing in serialised form the article which he wrote when Assistant Director, Climatological Services. This article, first published in the Meteorological Magazine, traces the origins and development of the United Kingdom Climatological Network and emphasizes the very large contribution made by non-professional observers.

W M Longworth

HQ NEWS

There have been several recent changes in staff appointments here at Headquarters.

The Assistant Director of Met O 1, Mr D R Grant, retired in September and his place as Head of the Observational Requirements and Practices Branch has been taken by Mr J M Nicholls.

Mr L R Walker of Met O 3a whom many of our readers will remember as a contributor of several interesting articles in earlier editions of the Newsletter also retired this year. Mr J W Davies has taken over and a new member of his staff is Chris Young, replacing Ray Warder. Ray will be remembered by all those who have attended training courses for voluntary observers in the past couple of years as the lecturer on Monthly Returns and Quality Control of data, on the occasion of the Wednesday visit to HQ.

News of Stations

Regrettably we have only reports of further closures this year and are indeed sorry to lose the services of the following co-operating stations:-

Haughley, the Agro-Met station near Stowmarket, Suffolk, whose records were first published in the Monthly Weather Report in 1975.

Gulval, near Penzance, Cornwall, another Agro-Met station, who have contributed records since 1925.

Regents Park, who contributed sunshine readings of recent years but they have a long history of recording weather data with records going back to 1870 and in a less complete form to 1848.

Stanford-le-Hope, near Basildon, Essex, a station run by the Anglian Water Authority whose records were first published in the Monthly Weather Report in 1975.

Other changes made this year include the reversion of Maidensgrove near Henley to rainfall readings only and a change of site for St Helens. This move has also involved a change of name to Lathom Park under which name the station was formerly known.

Cloud Types for Observers (Met O 716) £9.50 net

A new and completely revised edition of the above publication has been produced by this Branch of the Meteorological Office. The book is now on sale from Her Majesty's Stationery Office. It can be ordered from Government Bookshops, or from those booksellers who act as agents for HMSO.

Reproduced from the Meteorological Magazine, 197, 1978, pp 209-218

CO-OPERATING OBSERVERS AND THE CLIMATOLOGICAL NETWORK

By R. J. OGDEN

Summary

The origins and development of the United Kingdom Climatological Network are briefly described and the very large contribution made by non-professional observers is emphasized.

INTRODUCTION

The UK Climatological Network is in many ways a remarkable institution. In an age when our observational armoury includes satellites, radar and sophisticated automatic sampling and recording devices, the basic measurements at Network stations are still made with quite simple instruments; and despite the widespread modern trends for increased specialism and for services to be provided by the State, almost 90 per cent of Network stations are maintained by non-professional observers. These facts appear to suggest that the organization has simply failed to move with the times, but paradoxically the simple approach and the non-professional co-operation thereby acceptable, are the very reasons why the Network is so effective.

The purpose of a climatological observing network is to provide information from which the climatology of the country may be determined. It is essential for the observations to be made regularly to a common high standard, and for the spacing of the observing stations to be close enough to represent adequately the variations of climate to be found over different types of terrain in all parts of the country. But the basic observations of temperature, rainfall, sunshine, pressure, wind, humidity, visibility, weather and so on can be made by eye with the aid of simple instruments; if human observers are available in the right places, there is no need for complicated and expensive equipment. The UK Climatological Network has therefore been organized in a particularly cost-effective way by tapping the large reservoir of amateur interest in the weather and channelling the flow of information through professional filters. Without the voluntary stations, it would be impossible to achieve the required network density; without the professional co-ordination, the necessary uniform standards would not be attained. The two components are complementary to each other and in combination they make the Network an alloy of great strength.

ORIGINS OF THE NETWORK

With the invention of instruments such as the thermometer, barometer and rain-gauge, it became possible during the 17th century to make simple meteorological measurements, and the scientific curiosity of an age in which the Royal Society was founded led a number of gentlemen to make regular observations and to compare notes. From these initially haphazard exchanges, by the early half of the 19th century a strong tradition of amateur interest in weather observing had developed and regular observing routines had been established at certain scientific institutions. The value of this work gradually came to be accepted by a wider public, and by the late 1870s, a few municipalities had set up their own local weather observing stations, as had several schools and colleges.

Before this, however, the electric telegraph had been invented in 1844, and this offered a means of collecting weather data within a few hours. The first daily weather report was published in a newspaper only four years later, primarily for the benefit of farmers. At that time, most of the telegraph lines were associated with the railways, and in 1849 the railway companies were persuaded to contribute regular weather observations for publication; James Glaisher travelled the country to organize a synoptic weather reporting network and to train railway staff as observers.

When the Meteorological Department of the Board of Trade was formed in 1855 under Admiral FitzRoy (becoming the Meteorological Office in 1863), the safety of life at sea was the major concern; with the co-operation of the coastguard service, further telegraphic observing stations were organized as an integral part of a new storm warning service for inshore shipping.

It may be said that the UK Climatological Network formally came into existence in 1884 when the Monthly Weather Report was first published, and from the outset we may distinguish the three strands that were brought together. Firstly there were the Co-operating Observers, both private and those at institutions or municipalities, whose contribution was voluntary; these people shared a common interest in the weather, and in many cases this interest amounted to a spirit of dedication that has enriched the network throughout its history. The second strand was formed by some of the Auxiliary Observers who had been recruited for the synoptic network; most of these observers were employed in jobs that were in some way weather-related, and their observations were made whilst on duty. At least one railway observing station (Hawes Junction) contributed to the 1884 Report, as did a number of coastguard stations. Finally there was the Meteorological Office itself which played the key organizational role that brought the Network into existence and which laid down, and by inspection maintained, the necessary uniform standards for observing.

(To be continued)

Observers Award Scheme (see Editorial)

The list of observers who are nominated for the Book Award in 1982 is as follows:-

Observer	Station	Period Service
H H Hunter	Haydon Bridge	22 years
A White	Lowestoft	22 years
W C Hunt	Terrington St Clement	21 years
P J Power	Folkestone	21 years
A Chester	Sutton Bonington	17 years
Miss B Balmain	Newton Rigg	19 years
B O'Reilly	Skegness	19 years
W Dawson	Haydon Bridge	19 years
E Corrin	Douglas	18 years
D H Robertson	Aldenham	18 years
J Iwanicki	Brooms Barn	18 years
A J Frost	Monkswood	18 years
G B Smith	Weymouth	17 years
M Ware	Ilkley	17 years
E S Algar	Lowestoft	17 years
J Peake	Mansfield	17 years
H Jones	Oswestry	16 years
J H Janes	Guernsey L'Ancresse	16 years
Dr T E Rogers	Marlborough	16 years
A Rushton	Starcross	16 years
T G Phillips	Goudhurst	21 years
J W Phillips	Goudhurst	21 years
J Winstanley	Bolton	16 years
Mrs J Evans	Prestatyn	18 years

JB

THE SECOND EXTRACT FROM: "AN INTRODUCTION TO THE WORK OF THE METEOROLOGICAL OFFICE"

Meteorological Observations at the Surface

Within the British Isles there are some 100 Meteorological Office outstations of which about 65 make regular observation of weather. The following elements are observed hourly and, for climatological purposes, daily or 12-hourly:

Hourly	Daily/12-hourly
Wind speed and direction	Maximum and minimum temperatures
Visibility	Grass and Concrete minimum temperatures
Weather (precipitation, fog etc)	Rainfall amount
Past weather (previous 1, 3 or 6 hours)	Duration of sunshine
Atmospheric pressure and pressure changes during past 3 hours	State of ground
Air temperature	Soil temperatures, Solar radiation (At selected stations)
Dew point temperature	
Cloud amounts, types, heights	

Many stations report throughout the 24 hours. Additional information is available from a large number of auxiliary stations and from climatological and rainfall stations, many of them manned by volunteer amateurs. Observations from over 2000 overseas land stations are received at 3 or 6 hourly intervals and at 1 hourly intervals from Europe. Three Weather Ship Stations in the North Atlantic and one in the Norwegian Sea make hourly observations. United Kingdom Ships man one of the North Atlantic Stations. Many merchant ships also make observations at sea, normally at 6-hourly intervals. Worldwide over 7000 ships contribute observations (about 630 British registered) and in a typical 24-hour period Bracknell receives around 2500 ship reports.

Observations in the upper air

Data from the upper air - temperature, pressure, humidity and wind - are needed for a comprehensive three-dimensional analysis of the lower atmosphere. This information is obtained by means of the radio sonde, carried aloft by a large hydrogen-filled balloon. It transmits measurements of temperature, pressure and humidity every few metres up to about 27000 metres by radio to the ground station. The balloon is tracked by radar; wind speed and direction at all levels are obtained from the measurements so obtained. Eight stations in the UK make radio-sonde observations at 0000 and 1200 hours GMT, with wind-finding ascents at 0600 and 1800 hours GMT. The Weather Ships make radio sonde observations, and the total worldwide number of upper air stations is over 1200. Radio-sonde observations from over 500 stations are received at Bracknell within 3 hours of balloon launch. Reports are received from aircraft giving winds and temperatures and details on airframe icing, turbulence, etc. Cathode ray direction finding equipment at 4 UK stations is used to locate thunderstorms and weather radar units give information on the distribution and intensity of precipitation.

Weather satellites provide images of cloud cover in both visible and infra-red light. A polar orbiting satellite passes over or near the UK twice a day and the European geostationary satellite, Meteosat, will give half-hourly images. Satellites are invaluable aids to the analysis of weather, especially in areas where other sources of data are sparse; winds and temperatures in the upper air can be deduced from the satellite data and Meteosat will also provide information on the water vapour content of the air.

No single part of the atmosphere can be treated in isolation. A change in the weather pattern over Europe may often result from the reaction to changes in the upper wind patterns several hundred miles away. Such large-scale interactions usually take effect within 24-48 hours. Thus the analysis of weather must be undertaken on a hemispheric scale. All countries cooperate in the exchange of weather information with the main emphasis on surface and upper air observations made at 0000, 0600, 1200 and 1800 hours GMT.

(to be continued)

The Editor
Observers Newsletter
Headquarters Annexe
Met O1c(3)
Room T11

Cavendish
Sudbury
Suffolk

3rd May 1982

NIGHT HEATERS IN THE TILTING SIPHON RAIN RECORDER

Dear Sir

Last year I promised to let you know further how the night lights affected the operation of the T.S.R. during the past winter.

By listening to the forecasts, and if snow was promised I was able to put a heater in at about 2300, which again by using the glass from a food heater, lasted through the night until between 0900 and 1000. Generally I used one, but sometimes two were used depending on snowfall and time of day or night. I did however find that because of the heat, some evaporation occurred and more adjustment of the chart was required than normal - this was more noticeable during long periods of slight snow, rather than shorter periods of heavier snow. In addition to increasing the amount of rain in the hours, it was sometimes also necessary to increase the duration.

Condensation was a bit of a problem mainly because of freezing on the inside. I tried to dry as much of this as possible with a cloth, and also smeared a small amount of grease between the base and the upper part - this cured the problem of being unable to open the recorder.

To help to prevent freezing of the syphon, even when a heater was in use, I often tied a small plastic bag around the outside - and I feel sure that this helped. I was however very surprised one morning - as after snow was promised, the skies cleared and there was 8° of air frost - to my relief the heater and bag had prevented freezing.

During the past winter I did not lose any record of snow - and the syphon was removed when frost was forecast without snow.

I trust this information proves useful.

Yours sincerely

Michael Pizzey

Editor: Mr Pizzeys first report on this subject was published in Newsletter No 7 (October 1981).

Comment from our Instruments Branch (Met O16) "we have only rarely had complaints of the upper part of the TSR freezing to the base. A light smearing of grease is a perfectly satisfactory solution. A silicone based grease such as MS4 type would be preferable as this is water repellent.

Since Mr Pizzey uses the word 'small' in relation to his plastic bag we assume he is wrapping it around the float chamber. We cannot see that this serves any useful purpose if the night-light is alight. If the night-light goes out, the bag might help to retain the residual warmth in the float chamber a little longer.

Incidentally, TSR heaters of any type are only provided to prevent frost damage to the mechanism, not to melt snow".

STATE OF GROUND CODE

At a recent international meeting it was generally agreed that the present state of ground code is inadequate particularly for reporting occasions where snow or ice is present on the ground. It was therefore decided to replace the present single code for state of ground with two new codes - one of the new codes being for use on occasions when the ground is dry, moist, wet, flooded etc and the other new code being used when snow or ice is lying on the ground. The two new codes are given in Tables 5 and 6 below.

CODE FOR STATE OF GROUND

TABLE 5		TABLE 6
NO SNOW (Column 53)	Coded entry	SNOW AND ICE (Column 54)
Surface of ground DRY (without cracks and no appreciable amount of dust or loose sand).	0	Ground predominantly covered by ice (formed by the freezing of an existing water surface, i.e. puddles or thawed snow).
		Compact or wet snow (with or without ice)
Surface of ground MOIST.	1	covering less than one-half of the ground.
Surface of ground WET (i.e. with puddles).	2	covering at least one-half of the ground, but not completely.
Ground FLOODED.	3	even layer covering ground completely.
Surface of ground dry but FROZEN.	4	uneven layer covering ground completely.
		Loose dry snow
GLAZE on ground i.e. rain, drizzle or fog which has frozen on impact.	5	covering less than one-half of the ground.
Loose dry DUST or SAND not covering ground completely.	6	covering at least one-half of the ground, but not completely.
Thin cover of loose dry DUST or SAND covering ground completely.	7	even layer covering ground completely.
Moderate or thick cover of loose dry DUST or SAND covering ground completely.	8	uneven layer covering ground completely.
Extremely dry with cracks.	9	Snow covering ground completely; deep drifts.

SUMMARY OF SNOW PROCEDURES

Fresh Snowfall in last 24 hours

↓

Column 69 enter 1 Sleet / 5 Snow

No Fresh Snow in last 24 hours

↓

½ or more of Ground around the station covered with Snow at 0900		Less than ½ of Ground around the station covered with Snow at 0900		Snow completely melted at 0900		½ or more of Ground around the station covered with Snow at 0900	
Column 55-57	Enter Total Depth of Snow in centimetres	Column 55-57	Leave blank	Column 55-57	Leave blank	Column 55-57	Enter Total Depth of Snow in centimetres (Cannot be more than previous day's entry)
Column 54	Enter State of Ground 2,3,4, 6,7,8 or 9	Column 54	State of Ground enter 1 or 5	Column 54	Leave blank	Column 54	Enter State of Ground 2,3,4, 6,7,8 or 9
Column 53	Leave blank			Column 53	Enter State of Ground	Column 53	Leave blank

NB. A. If there is Snow Lying at 9 am GMT, then State of Ground must be entered in Column 54, leaving Column 53 blank.

B. Columns 55-57 (Snow Depths) have entries only when the State of Ground in Column 54 is 2, 3, 4, 6, 7, 8 or 9.

C. Depths of Snow are measured in Centimetres (i.e. Tens of Millimetres) and entered against the day of measurement.

TABLE FOR CONVERTING DEPTHS OF SNOW IN INCHES TO CENTIMETRES AND CODE USED FOR ENTRY IN COLUMNS 55-57

Inches	Whole Centimetres	Cols. 55-57
$\frac{1}{4}$	1	001
$\frac{1}{2}$	1	001
1	3	003
$1\frac{1}{2}$	4	004
2	5	005
$2\frac{1}{2}$	6	006
3	8	008
$3\frac{1}{2}$	9	009
4	10	010
$4\frac{1}{2}$	11	011
5	13	013
$5\frac{1}{2}$	14	014
6	15	015
$6\frac{1}{2}$	17	017
7	18	018
$7\frac{1}{2}$	19	019
8	20	020
$8\frac{1}{2}$	22	022
9	23	023
$9\frac{1}{2}$	24	024
10	25	025
$10\frac{1}{2}$	27	027
11	28	028
$11\frac{1}{2}$	29	029
12	30	030

NB Less than $\frac{1}{4}$" is "trace". The entry in Columns 55-57 is X in Column 55 leaving Columns 56-57 blank.

The introduction of the two new codes on 1 January 1982 has necessitated a corresponding change in the layout of the columns on the monthly weather return (Metform 3208B) and the new version of the return now includes two columns (Columns 53 and 54) for reporting state of ground instead of the present single column - Column 63.

When no snow or ice is present on the ground, the highest code figure applicable is selected from Table 5 above and then entered in Column 53 of the monthly weather return. Column 54 is then left blank.

When snow or ice is present on the ground, the highest code figure applicable is selected from Table 6 and then entered in Column 54. Column 53 is then left blank.

Who's who in Met O 1 (Continued)

Mike Longworth:

Joined the Meteorological Office in 1962 following two years National Service as an 'airman meteorologist'. Apart from a brief period of forecasting at Preston, spent much time in the Upper Air Branch as Scientific Assistant, Shift Supervisor and Officer-in-charge at various stations in the UK and overseas.

In 1970 got married, was promoted to Higher Scientific Officer and was posted to Bracknell and became part of the HQ Branch administering and inspecting the network of Upper Air Stations.

Between 1975 and 1977 was seconded to the Seychelles Meteorological Service to set up and run a new upper air station. An interesting job which involved both Independence celebrations and a coup d'etat.

Returned to Bracknell in 1977 and spent two years in a Research Branch involved in developing a drop-sonde (a device which when dropped from an aeroplane measures pressure, temperature, humidity and wind on its descent, by parachute, to the ground). Promoted to Senior Scientific Officer in 1979 and took charge of the section running the climatological station network. One son, born 1981.

WEATHER IN THE UNITED KINGDOM JANUARY - JUNE 1982

Although most districts were very mild for a time at the beginning of January, on the 2nd the temperature reached 14.0 °C at Melbury in Devon, very cold weather had returned from the north by the 6th. While in general there was less snow than in December there were two snowstorms with considerable drifting, one in the north-east around the 4th and the other in the south and over Northern Ireland around the 8th. The latter was particularly severe over South Wales and adjacent parts of England with over 60 cm of snow lying in places and up to 120 cm in Mid Glamorgan where conditions were thought to be the worst so far this century. The second week was exceptionally cold; on the 10th the temperature fell to -27.2 °C at Braemar in Grampian Region, thereby equalling its own United Kingdom lowest of February 1895, and to -26.1 °C at Newport in Shropshire, the lowest as yet recorded in England. Temperatures rose abruptly around mid-month and the second half was mainly mild, bringing mean temperatures for the month up to within 1 °C of average in most parts. The mild weather continued during the first two weeks of February, many parts of England and Wales being exceptionally mild on the 9th when a maximum of 15.7 °C was recorded at Llangenny in Powys. Easterly winds then brought a spell of cold weather with a little snow in places, but it became mild again over the last few days. In many central and eastern areas less than half the February average rainfall was recorded. For the third consecutive year March was wet, much of the rainfall occurring during the first three unsettled and, at times, stormy weeks. On the 3rd a gust of 97 kn was recorded on Great Dun Fell in Cumbria. In sharp contrast the fourth week was dry and warm although there was some frost by night. On the 25th the temperature reached 20.2 °C at Dyce Airport, Aberdeen while on the 26th 19.1 °C was recorded at Weston Park in Sheffield. Thunder was heard on six days at the London Weather Centre, an exceptionally high number for March. Nevertheless, it was a sunny month, some areas having one of their sunniest Marches this century.

Although not as exceptionally dry as in 1980 many areas received less than half their average rainfall in April, much of this falling during the first seven days. Eastern and central districts became very warm around the 5th when a maximum of 20.9 °C occurred at Kew Gardens. But the second week was rather cold with night-frost and, mainly in the north and east, wintry showers. The remainder of the month was mostly rather warm and sunny; on the 27th the temperature reached 22.3 °C at Linton-on-Ouse in North Yorkshire. For about a week at the start of May it was cold and showery with night frost at times and, mostly in the north, some snow. On the 5th the temperature fell to -7.7 °C at Santon Downham in Norfolk and to -5.3 °C at Bastreet in Cornwall, while the minimum of -0.3 °C at Valley on Anglesey was the first May frost there in more than forty years of records. Storm force winds occurred in some extreme northern parts of England on the 3rd when a gust of 72 kn was recorded at Lynemouth in Northumberland. Apart from a few thundery interludes the rest of the month was mainly dry and sunny while around mid-month and again at the end it was very warm, temperatures exceeding 25 °C in a number of places. Except over parts of Greater London and East Anglia, where there was heavy rain during the night of the 26/27th, the month was dry generally over England and Wales. June was a remarkable month, especially regarding rainfall with some places having their wettest and others their driest on record. Whereas most areas were very wet, more than four times the average rainfall fell in parts of both South and West Yorkshire, the far north of Scotland was very dry with only about 10 per cent of normal at Cape Wrath in the Highland Region and over Shetland. Although the first week or so was mostly sunny and hot, temperatures reaching 27 to 30 °C in many areas, local severe thunderstorms developed daily. On the 2nd 90.2 mm of rain and hail fell in 2 hours at Wootton Bassett in Wiltshire while on the 4th 92 mm, including 82.4 mm in 70 minutes, were reported at Cheshunt in Hertfordshire. The remaining three weeks were mainly cool and unsettled, the north-east

being particularly dull and Durham recorded its lowest sunshine total in June since 1916. Thunder was especially frequent over East Anglia while on the 18th a storm left streets in the north-east of Bristol deep in hail.

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